

ART 34 AMDT

EP 03 74 6487.2
Sipac Corporation
Our Ref.: K2721 EP

(Amended)

**VOSSIUS & PARTNER
PATENTANWÄLTE
SIEBERTSTR. 4
81675 MÜNCHEN**

18. Okt. 2004

CLAIMS

~~What is claimed is:~~

1. A resist removing apparatus, comprising:
a treatment chamber constituting a treatment space for removing a resist on a substrate;
a substrate supporter supporting the substrate in said treatment chamber and having a mechanism for moving the substrate in an upward and downward direction in said treatment chamber and freely adjusting the treatment space; and
a liquid film generator for forming a liquid film containing active oxygen on the resist of the substrate,

wherein on forming the liquid film, the treatment space is adjusted by the moving mechanism of said substrate supporter to control a state of the liquid film.

2. The resist removing apparatus according to claim 1, wherein said liquid film generator includes an ultraviolet ray emitting mechanism for emitting ultraviolet rays to the liquid film formed on the substrate.

3. The resist removing apparatus according to claim 2, wherein wavelengths of the ultraviolet rays emitted from the ultraviolet ray emitting mechanism are 172 nm to 310 nm.

4. The resist removing apparatus according to claim 2, wherein the ultraviolet ray emitting

mechanism is a low pressure ultraviolet lamp.

5. The resist removing apparatus according to claim 2, wherein a surface of the substrate and an upper surface portion of an inside of said treatment chamber are brought into close vicinity to each other by the moving mechanism of said substrate supporter, and the state of the liquid film is adjusted to a size to cover an approximately entire surface of the resist on the substrate.

6. The resist removing apparatus according to claim 5, wherein a distance between the surface of the substrate and the upper surface portion of the inside of said treatment chamber is 1 mm or less.

7. The resist removing apparatus according to claim 6, wherein said liquid film generator includes an ozone supply mechanism for supplying ozone water to the liquid film.

8. The resist removing apparatus according to claim 6, wherein said liquid film generator includes a peroxide water supply mechanism for supplying peroxide water to the liquid film.

9. The resist removing apparatus according to claim 2, wherein the surface of the substrate and the upper surface portion of the inside of said treatment chamber are separated from each other by the moving mechanism of said substrate supporter, and the state of the liquid film is adjusted so that condensation forms on the resist surface on the substrate as liquid drops.

10. The resist removing apparatus according to claim 9, wherein said liquid film generator includes a mechanism for supplying mist containing water vapor.

11. The resist removing apparatus according to claim 10, wherein said liquid film generator includes an ozone supply mechanism for supplying ozone gas to the mist containing water vapor generated in the mist containing water vapor supply mechanism to generate the active oxygen inside the liquid film formed on the substrate.

12. The resist removing apparatus according to claim 1, wherein said liquid film generator has a porous ceramic plate and supplies mist containing water vapor from holes of the porous ceramic plate.

13. A method of removing a resist, comprising the steps of:

performing distance adjustment so that a substrate provided with a resist on a surface and an upper surface portion of an inside of a treatment chamber constituting a treatment space for removing the resist are close to each other;

forming a liquid film containing active oxygen to have film thickness restricted to the distance to cover an approximately entire surface of the resist on the substrate;; and

dissolving and removing the resist by an action of the active oxygen.

14. The method of removing the resist according to claim 13, wherein the distance between the surface

of the substrate and the upper surface portion of the inside of the treatment chamber is adjusted to 1 mm or less.

~~15. The method of removing the resist according to claim 13, wherein generation of the active oxygen is promoted in the liquid film by emitting ultraviolet rays to the liquid film.~~

15. ~~16~~ The method of removing the resist according to claim 13, wherein the active oxygen is generated in the liquid film by supplying ozone water to the liquid film.

~~17. The method of removing the resist according to claim 13, wherein the active oxygen is generated in the liquid film by supplying peroxide water to the liquid film.~~

16. ~~18~~ A method of removing a resist, comprising the steps of:

performing distance adjustment so that a substrate provided with a resist on a surface and an upper surface portion of an inside of a treatment chamber constituting a treatment space for removing the resist are spaced from each other;

supplying mist containing water vapor containing active oxygen to allow liquid drops to form condensation on a surface of the resist; and

dissolving and removing the resist by an action of the active oxygen.

17. ~~19~~ ^(13 or 16) The method of removing the resist according to claim ~~18~~, wherein generation of the active oxygen

is promoted in the liquid film by emitting ultraviolet rays to the liquid film.

18. ~~201~~⁷⁶ The method of removing the resist according to claim ~~18~~⁷⁶, wherein the active oxygen is generated in the liquid film by supplying ozone gas to the liquid film.

19. ~~211~~^{13 or 16} The method of removing the resist according to claim ~~19~~^{13 or 16}, wherein the active oxygen is generated in the liquid film by supplying peroxide water to the liquid film.